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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,889	07/17/2003	Xueying Huang	CL1941 US NA	2771

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EXAMINER	
TSOY, ELENA	
ART UNIT	**PAPER NUMBER**
1762	

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/622,889	HUANG ET AL.	
	Examiner	Art Unit	
	Elena Tsoy	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *8,9,19-28 and 30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,10-18 and 29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/29/03,6/6/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-18, 29, drawn to a method of generating a population of nanoparticles, classified in class 427, subclass 212.

II. Claims 19-28, drawn to a method for determining the average particle size, classified in class 204, various subclasses.

III. Claim 30, drawn to a population of nanoparticles, classified in class 428, subclass 402.

Distinctness

The inventions are distinct, each from the other because:

Inventions I/III and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the method for determining the average particle size can be practiced with different particles than those of invention III or particles prepared by invention I.

Inventions I and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case a population of nanoparticles can be prepared from organic solvents.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Groups II and III, restriction for examination purposes as indicated is proper.

Claim 1 of Group I is generic to a plurality of disclosed patentably distinct species such as (i) metal nanoparticles (Claims 5-7) and (ii) semiconductive nanoparticles (Claims 8, 9). Applicant is required under 35 U.S.C. 121 to elect either species (i) or (ii), even though this requirement is traversed.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with S. Neil Feltham on August 1, 2005 a provisional election was made without traverse to prosecute the invention of I, claims 1-18, 29, species (i), Claims 5-7. Affirmation of this election must be made by applicant in replying to this Office action. Claims 8-9 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-7, 10-18, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted state of art, and Subramanium et al (US 6,113,795) and Templeton et al (Langmur, 1999,15, pp 66-76) in view of Panek et al (US 4,143,026) and Colman et al (US 6,384,297).

Applicants admitted that methods for franctionating gold particles from organic solvents by addition of non-solvent were known in the art (See specification, page 2, lines 32-37 to page 3, lines 1-2). For example, Subramanium et al disclose that the franctionation of particles can be carried out by introducing *anti-solvent* or a **mixture** of *anti-solvents* (See column 3, line 29) into a solution of particles in an organic solvent followed by *filtering* resulting particles (See column 3, lines 7-32). However, the application of these methods to the franctionatin of stabilized, water-soluble nanoparticles such as stabilized, charged, water-soluble tiopronin or coenzyme monolayer-protected gold nanoparticles described in Templeton et al (See specification, page 1, lines 22-25; page 12, lines 29-34) by adding electrolyte such as NaCl (Claims 1, 12, 13) and substantially water-miscible organic solvent such as methanol, ethanol to an aqueous population of gold nanoparticles, was not taught in the art (Claims 1, 14) (See specification, page 3, lines 2-3). Templeton et al describes that tiopronin or coenzyme monolayer-protected gold nanoparticles is completely **insoluble** in methanol but quite soluble in water (See page 67, column 2, beginning of paragraph 4).

Panek et al teach that dissolved polymers can be coagulated by addition of *electrolyte* or can be precipitated by altering solubility of the water-soluble polymers in water by adding suitable liquids in which polymer is insoluble (See column 1, lines 44-57). Colman et al teach

that it is well known that addition of an inorganic salt such as NaCl, KCl, NaBr (See column 5, lines 54-55) to an aqueous solution of a water-soluble polymer may force polymer precipitation through a salting-out phenomenon. For example, anionic polymers such as sodium salts of polyacrylate and carboxymethyl cellulose become insoluble in an aqueous solution of common salt having a concentration of 4 to 5% or higher; non-ionic polymers such as hydroxyethyl cellulose and polyvinyl alcohol (PVA) are insoluble in an aqueous solution only when the concentration of the salt is increased to about 10% or higher (See column 5, lines 56-67).

It is held that it is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose....

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have added *anti-solvent* or a **mixture** of *anti-solvents* such as *methanol* and NaCl to an aqueous solution of tiopronin or coenzyme monolayer-protected gold nanoparticles of Templeton et al with the expectation of providing the desired precipitation of gold nanoparticles, as taught by Panek et al and Colman et al.

It is the Examiner's position that the resulting gold nanoparticles would have narrow size distribution since they are produced by a process substantially identical to that of claimed invention.

It is held that where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, claimed properties or functions are presumed to be inherent. See MPEP 2111.02, 2112.01. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the

PTOshows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

As to the choice of a mixture of anti-solvents, one of ordinary skill in the art at would understand that the choice of anti-solvents would depend on particular monolayer coating used. Note that claimed organic solvents include conventional organic solvents. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have discovered the optimum mixtures of anti-solvents (including those of claimed invention) in a method of Applicants' admitted state of art, and Subramanium et al and Templeton et al in view of Panek et al and Colman et al through routine experimentation in the absence of showing of criticality.

It is held that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (571) 272-1429. The examiner can normally be reached on Mo-Thur. 9:00-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-141523. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ELENA TSOY
PRIMARY EXAMINER
ETsoy

Elena Tsoy
Primary Examiner
Art Unit 1762

August 5, 2005